

## APPARATUS AND METHOD FOR SEALING A BAG

### TECHNICAL FIELD

5 This invention relates generally to closures, and more particularly to an apparatus for sealing bags.

### BACKGROUND OF THE INVENTION

Many kinds of products are offered for sale in hermetically sealed bags to 10 prevent the contamination of the product, and to generally preserve the quality of the product prior to sale. When the bag is opened by a consumer, the product contained therein is exposed to air, which may progressively degrade the quality of the product. For example, where the product is a food product, an opened bag generally exposes the product to microbial agents such as bacteria that accelerate the decay of the product. The food 15 product may also be exposed to atmospheric moisture that may render the food product less appealing. Alternatively, moisture present in the food product may be lost to the atmosphere, so that the food product becomes dehydrated. As a consequence, it is frequently necessary to reseal a bag after opening in order to preserve the food product.

One prior art apparatus for resealing an opened bag is a spring clamp device 20 having a pair of opposed and elongated jaws that clamp the opened end of the bag closed. Known spring clamp devices are generally available only in limited sizes so that the elongated jaws may not extend the entire width of the opened end portion of the bag. As a result, the spring clamp device may fail to adequately seal an opened bag properly. In addition, known spring clamp devices are comprised of numerous parts, and therefore are 25 relatively expensive to manufacture.

Another prior art apparatus for sealing an opened bag is the well-known ZIP-LOC closure. Although the ZIP-LOC closure desirably permits an opened bag to be hermetically resealed, the bag that is supplied to the consumer must be configured with the ZIP-LOC closure. Since many currently-available food products are provided in bags that

do not include the ZIP-LOC closure, a consumer is required to transfer the contents from a bag that does not possess the ZIP-LOC closure into a bag that has a ZIP-LOC closure in order to attain the desirable features associated with the ZIP-LOC closure. Since this may require the purchase of additional bags, this approach constitutes an added expense for a 5 consumer.

Still other bag resealing devices are known in the art. For example, flat closures of the type commonly found on bags containing bread and the like are useful for retaining the bag contents within the bag, but generally only partially hermetically seal the contents of the bag. As a result, flat closures are generally found only on food products 10 having a limited shelf life.

Accordingly, it would be desirable to have a bag sealing apparatus that may be applied to many types of opened bags, and that may be conveniently and rapidly attached to the bag to provide a seal that is substantially air-tight. It is would further be desirable to have a bag resealing device that is relatively inexpensive to manufacture.

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## SUMMARY OF THE INVENTION

The present invention relates generally to closures, and more particularly to an apparatus for sealing bags. In one aspect, the invention includes an elongated sealing member and an elongated receiver portion to receive the sealing member. The receiver 20 portion includes at least one engagement aperture to receive the sealing member and an opening extending along a length of the receiver portion. The opening further includes lugs that project generally outwardly from the receiver portion and proximate to the opening to assist a user in manipulating the apparatus. In another aspect, the invention includes a method for sealing a bag, including positioning a portion of a resealable bag 25 proximate to the engagement aperture and positioning the sealing member proximate to the portion of the resealable bag and the engagement aperture. The sealing member is then pressed into the engagement aperture with the portion of the resealable bag interposed between the sealing member and the receiver portion to seal the bag.

## BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is an isometric and exploded view of a bag sealing apparatus according to an embodiment of the invention.

Figure 2 is an isometric view of a bag sealing apparatus according to an 5 embodiment of the invention.

Figure 2A is a cross-sectional view of the bag sealing apparatus of Figures 1 and 2 according to an alternative embodiment of the invention.

Figure 2B is a cross-sectional view of the bag sealing apparatus of Figures 1 and 2 according to another alternative embodiment of the invention.

10 Figure 3 is an isometric view of a bag sealing apparatus according to the embodiment shown in Figures 1 and 2 applied to a bag.

Figure 4 is an isometric view of a bag sealing apparatus according to another embodiment of the invention.

15 Figure 5 is an isometric view of a bag sealing apparatus according to still another embodiment of the invention.

Figure 6 is an isometric view of a bag sealing apparatus according to still another embodiment of the invention.

Figure 7 is an exploded, isometric view of a bag sealing apparatus according to still yet another embodiment of the invention.

20 Figure 8 is an isometric view of a bag sealing apparatus according to a further embodiment of the invention.

Figure 9 is an isometric view of a bag sealing apparatus according to a further embodiment of the invention.

25 Figure 10 is an isometric view of a bag sealing apparatus according to still a further embodiment of the invention.

## DETAILED DESCRIPTION OF THE INVENTION

The present invention is generally directed to closures, and more particularly to an apparatus for sealing bags. Many of the specific details of certain embodiments of the

invention are set forth in the following description and in Figures 1 through 10 to provide a thorough understanding of such embodiments. One skilled in the art will understand, however, that the present invention may be practiced without several details described in the following description.

5 Figure 1 is an isometric view of a bag sealing apparatus 10 according to an embodiment of the invention. The bag sealing apparatus 10 includes an elongated sealing portion 12 having a generally circular cross section, which may be solid or may be at least partially solid, so that the sealing portion 12 is generally tubular. The sealing apparatus 10 also includes a generally arcuate-shaped receiver portion 14 having a centrally-positioned 10 engagement aperture 16 that extends along a length of the receiver portion 14. The aperture 16 of receiver portion 14 also has an opening 18 that extends between a pair of opposed opening ridges 19. The opening 18 generally maintains a constant width between the ridges 19 as the opening extends along the length of the receiver portion 14, the constant width generally being less than a diameter of the sealing portion 12. The receiver portion 15 14 also includes lugs 20 that extend outwardly from the opening 18 and generally upwardly from the ridges 19, and further extend along the length of the receiver portion 14 to manually assist a user in manipulating the respective portions of the apparatus 10, as will be described in greater detail below.

Still referring to Figure 1, and also now to Figure 2, the engagement aperture 20 16 of the receiver portion 14 generally has an inner diameter approximately dimensioned to receive the sealing portion 12 and is further circumferentially expandable so that the sealing portion 12 may be removably retained within the engagement aperture 16 when the sealing portion 12 is inserted into the aperture 16, as shown in Figure 2. The sealing portion 12 and/or the receiver portion 14 may be comprised of any semi-rigid material that is 25 elastically deformable. In one specific embodiment, the sealing portion 12 and the receiver portion 14 may be formed from a polymer material, such as a polyurethane. In other embodiments, other materials may also be used. For example, the sealing portion may be formed from a generally rigid material, such as a metal, while the receiver portion 14 is formed from a semi-rigid polymeric material. In still other particular embodiments, the

sealing portion 12 and/or the receiver portion 14 may be formed by extruding a polymeric material through an extrusion die that is configured to form a desired cross-sectional shape.

Figures 2A and 2B are cross-sectional views of the bag sealing apparatus 10 of Figures 1 and 2 that show alternative cross-sectional configurations for the apparatus 10.

5 In Figure 2A, the lugs 20 extend more outwardly from the receiver portion 14 than the embodiment shown in Figures 1 and 2. In Figure 2B, the lugs 20 extend downwardly from the receiver portion 14, and also extend outwardly from the receiver portion 14 at a location that is spaced apart from the opening 18.

Turning now to Figure 3, a method for sealing a bag 22 with the bag sealing apparatus 10 of Figures 1 and 2 will now be described in detail. The bag 22 is generally a partially sealed envelope having an opening 24 to receive contents into the bag 22, as is well understood in the art. The sealing apparatus 10 is generally applied to the bag 22 proximate to the opening 24. The sealing portion 12 and the receiver portion 14 are initially separated, as shown in Figure 3, and mutually spaced apart and maintained 15 generally approximately parallel to the opening 24. The opening 24 of the bag 22 may then be threaded between the mutually spaced apart sealing portion 12 and receiver portion 14. The sealing portion 12 may then be impressed against the opening 18 of the receiver portion 14. As the sealing portion 12 is continuously pressed against the receiver portion 14, the sealing portion 12 moves into the engagement aperture 16 with a portion of the bag 20 22 proximate to the opening 24 threaded between the sealing portion 12 and the receiver portion 14. When the sealing portion 12 is fully engaged with the receiver portion 14, the portion of the bag 22 that is proximate to the opening 24 is sealably interposed between the sealing portion 12 and the engagement aperture 16.

Still referring to Figure 3, the bag sealing apparatus 10 may be removed 25 from the bag 22 by grasping a portion of the sealing portion 12 that extends beyond an end of the receiver portion 14 and simultaneously applying a force to the lugs 20 to move the sealing portion 12 through the opening 18 of the receiver portion 14, so that the sealing portion 12 and the receiver portion 14 are again mutually spaced apart. The portion of the

bag 22 proximate to the opening 24 may now be separated from the sealing portion 12 and/or the receiver portion 14 so that an interior portion of the bag 22 may be accessed.

The foregoing embodiment offers numerous advantages over the prior art. For example, since the sealing portion 12 and the receiver portion 14 are advantageously 5 formed as single components having no moving parts, they may be relatively inexpensively produced. Further, since the disclosed sealing apparatus is not integrally formed with a bag, or other enclosure device, it may be used on a wide variety of bags, and also allows repeated use. Thus, the foregoing embodiment, in particular, avoids the shortcomings associated with the ZIP-LOC closure.

10 Figure 4 is an isometric view of a bag sealing apparatus 30 according to another embodiment of the invention. The bag sealing apparatus 30 includes a sealing portion 12 that engages a receiver portion 14. Many of the specific details of the sealing portion 12 and the receiver portion 14 have been described previously, and for reasons of brevity, will not be described further. The receiver portion 14 includes a handle 26 that 15 extends at least partially along a longitudinal length of the receiver portion 14. The handle 26 may be integrally formed with the receiver portion 14, or it may be separately formed and subsequently fixedly attached to the receiver portion 14. In addition to the advantages described in connection with the foregoing embodiment, the handle 26 advantageously permits a bag (not shown in Figure 4) to be hand-carried while the bag is retained by the 20 sealing apparatus 30.

Figures 5 and 6 are isometric views of a bag sealing apparatus 40 according to still another embodiment of the invention. The bag sealing apparatus 40 includes a sealing portion 42 that engages a receiver portion 14. Many of the specific details of the sealing portion 12 and the receiver portion 42 have been described previously, and for 25 reasons of brevity, will not be described further. The sealing portion 42 includes a bore 44 that extends along a length of the sealing portion 42. A lanyard 46 comprised of a flexible material is threaded through the bore 44 and coupled to itself to form an endless loop of the flexible material that may be used as a hanger or a handle so that the a bag (not shown) may be hand-carried, or retained on a supporting hook (not shown) when a bag is retained by the

sealing apparatus. The lanyard 46 may be optionally connected to the receiver portion 14 so that the sealing portion 42 may be coupled to the receiver portion 14. Coupling the receiver portion 14 and the sealing portion 42 thus advantageously avoids misplacing the receiver portion 14 relative to the sealing portion 42.

5 Figure 7 is an exploded, isometric view of a bag sealing apparatus 50 according to still yet another embodiment of the invention. The bag sealing apparatus 50 again includes a sealing portion 12 that engages a receiver portion 52. Many of the specific details of the sealing portion 12 and the receiver portion 52 have been described previously, and for reasons of brevity, will not be described further. The receiver portion 52 includes a  
10 centrally-positioned engagement aperture 54 that extends along a length of the receiver portion 52. The aperture 54 of the receiver portion 52 is further positioned within a supporting cover 56 that is coupled to the engagement aperture 54. The apparatus 50 may be formed by an extrusion process, as previously described, or it may be advantageously formed from an appropriately-sized flat pattern of a material that is formed into the shape  
15 as shown in Figure 7, and having respective ends of the flat pattern joined at a seam 58 by adhesive bonding, or a thermal fusion process.

Figures 8 and 9 are isometric views of a bag sealing apparatus 60 according to a further embodiment of the invention. The bag sealing apparatus 60 includes more than one sealing portion 12 that engages a receiver portion 62. Many of the specific details of  
20 the sealing portion 12 and the receiver portion 62 have been described previously, and for reasons of brevity, will not be described further. The receiver portion 62 is comprised of a pair of adjacent engagement apertures 64 configured to receive respective sealing portions 12. The apparatus 60 advantageously permits more than a single bag to be retained by the apparatus 60. Although the foregoing embodiment includes a pair of sealing portions 12  
25 and corresponding engagement apertures 64, it is understood that more than a pair of sealing portions 12 and engagement apertures 64 may be used.

Figure 10 is a side-elevation view of a bag sealing apparatus 70 according to yet a further embodiment of the invention. The bag sealing apparatus 70 again includes a sealing portion 12 that engages a receiver portion 14, as shown in Figure 1. The apparatus

70 further includes a flexible member 72 that couples the sealing portion 12 to the receiver portion 14. The flexible member 72 advantageously permits the sealing portion 12 and the receiver portion 14 to be formed as a unitary assembly. The flexible member may thus be formed as a separate component that is joined to the sealing portion 12 and the receiver 5 portion 14 by an adhesive bonding process, or by thermal fusion process.

The above description of illustrated embodiments of the invention is not intended to be exhaustive or to limit the invention to the precise form disclosed. While specific embodiment of, and examples of, the invention are described in the foregoing for illustrative purposes, various equivalent modifications are possible within the scope of the 10 invention, as those skilled within the relevant art will recognize. Moreover, the various embodiments described above can be combined to provide further embodiments. Accordingly, the invention is not limited by the disclosure, but instead the scope of the invention is to be determined entirely by the following claims.